(a) Monthly carbonate consumption (by carbonate type in tons).

(b) You must document the procedures used to ensure the accuracy of the monthly measurements of carbonate consumption, carbonate input or carbonate output including, but not limited to, calibration of weighing equipment and other measurement devices.

(c) Records of all analyses conducted to meet the requirements of this rule.

(d) Records of all calculations conducted.

§ 98.218 Definitions.

All terms used in this subpart have the same meaning given in the Clean Air Act and subpart A of this part.

TABLE U–1 TO SUBPART U OF PART 98—CO_2 EMISSION FACTORS FOR COMMON CARBONATES

Mineral name—carbonate	CO_2 emission factor (tons CO_2/ton carbonate)
Limestone—$CaCO_3$	0.43971
Magnesite—$MgCO_3$	0.52197
Dolomite—$CaMg(CO_3)_2$	0.47732
Siderite—$FeCO_3$	0.37987
Ankerite—$Ca(Fe, Mg, Mn)(CO_3)_2$	0.47572
Rhodochrosite—$MnCO_3$	0.38286
Sodium Carbonate/Soda Ash—Na_2CO_3	0.41492

Subpart V—Nitric Acid Production

§ 98.220 Definition of source category.

A nitric acid production facility uses one or more trains to produce weak nitric acid (30 to 70 percent in strength). A nitric acid train produces weak nitric acid through the catalytic oxidation of ammonia.

§ 98.221 Reporting threshold.

You must report GHG emissions under this subpart if your facility contains a nitric acid train and the facility meets the requirements of either § 98.2(a)(1) or (a)(2).

§ 98.222 GHGs to report.

(a) You must report N_2O process emissions from each nitric acid train as required by this subpart.

(b) You must report under subpart C of this part (General Stationary Fuel Combustion Sources) the emissions of CO_2, CH_4, and N_2O from each stationary combustion unit by following the requirements of subpart C.

[74 FR 56374, Oct. 30, 2009, as amended at 78 FR 71959, Nov. 29, 2013]

§ 98.223 Calculating GHG emissions.

(a) You must determine annual N_2O process emissions from each nitric acid train according to paragraphs (a)(1) or (a)(2) of this section.

(1) Use a site-specific emission factor and production data according to paragraphs (b) through (i) of this section.

(2) Request Administrator approval for an alternative method of determining N_2O emissions according to paragraphs (a)(2)(i) and (a)(2)(ii) of this section.

(i) You must submit the request within 45 days following promulgation of this subpart or within the first 30 days of each subsequent reporting year.

(ii) If the Administrator does not approve your requested alternative method within 150 days of the end of the reporting year, you must determine the N_2O emissions for the current reporting period using the procedures specified in paragraph (a)(1) of this section.

(b) You must conduct an annual performance test for each nitric acid train according to paragraphs (b)(1) through (3) of this section.

(1) You must conduct the performance test at the absorber tail gas vent, referred to as the test point, for each nitric acid train according to § 98.224(b) through (f). If multiple nitric acid trains exhaust to a common abatement technology and/or emission point, you must sample each process in the ducts before the emissions are combined, sample each process when only one process is operating, or sample the combined emissions when multiple processes are operating and base the site-specific emission factor on the combined production rate of the multiple nitric acid trains.

(2) You must conduct the performance test under normal process operating conditions.

(3) You must measure the production rate during the performance test and calculate the production rate for the test period in tons (100 percent acid basis) per hour.

(c) Using the results of the performance test in paragraph (b) of this section, you must calculate an average site-specific emission factor for each nitric acid train ''t'' according to Equation V–1 of this section:

$$EF_{N2Ot} = \frac{\sum_{1}^{n} \frac{C_{N2O} * 1.14 \times 10^{-7} * Q}{P}}{n} \qquad \text{(Eq. V-1)}$$

where:

EF_{N_2Ot} = Average site-specific N_2O emissions factor for nitric acid train ''t'' (lb N_2O/ton nitric acid produced, 100 percent acid basis).

C_{N2O} = N_2O concentration for each test run during the performance test (ppm N_2O).

1.14×10^{-7} = Conversion factor (lb/dscf-ppm N_2O).

Q = Volumetric flow rate of effluent gas for each test run during the performance test (dscf/hr).

P = Production rate for each test run during the performance test (tons nitric acid produced per hour, 100 percent acid basis).

n = Number of test runs.

(d) If nitric acid train ''t'' exhausts to any N_2O abatement technology ''N'', you must determine the destruction efficiency for each N_2O abatement technology ''N'' according to paragraphs (d)(1), (2), or (3) of this section.

(1) Use the manufacturer's specified destruction efficiency.

(2) Estimate the destruction efficiency through process knowledge. Examples of information that could constitute process knowledge include calculations based on material balances, process stoichiometry, or previous test results provided the results are still relevant to the current vent stream conditions. You must document how process knowledge (if applicable) was used to determine the destruction efficiency.

(3) Calculate the destruction efficiency by conducting an additional performance test on the emissions stream following the N_2O abatement technology.

(e) If nitric acid train ''t'' exhausts to any N_2O abatement technology ''N'', you must determine the annual amount of nitric acid produced on nitric acid train ''t'' while N_2O abatement technology ''N'' is operating according to §98.224(f). Then you must calculate the abatement utilization factor for each N_2O abatement technology ''N'' for each nitric acid train ''t'' according to Equation V–2 of this section.

$$AF_{t,N} = \frac{P_{t,N}}{P_t} \qquad \text{(Eq. V-2)}$$

where:

$AF_{t,N}$ = Abatement utilization factor of N_2O abatement technology ''N'' at nitric acid train ''t'' (fraction of annual production that abatement technology is operating).

P_t = Total annual nitric acid production from nitric acid train ''t'' (ton acid produced, 100 percent acid basis).

$P_{t,N}$ = Annual nitric acid production from nitric acid train ''t'' during which N_2O abatement technology ''N'' was operational (ton acid produced, 100 percent acid basis).

(f) [Reserved]

(g) You must calculate N_2O emissions for each nitric acid train ''t'' according to paragraph (g)(1), (g)(2), (g)(3), or (g)(4) of this section.

(1) If nitric acid train ''t'' exhausts to one N_2O abatement technology ''N'' after the test point, you must use the emissions factor (determined in Equation V–1 of this section), the destruction efficiency (determined in paragraph (d) of this section), the annual nitric acid production (determined in paragraph (i) of this section), and the abatement utilization factor (determined in paragraph (e) of this section) according to Equation V–3a of this section:

$$E_{N2Ot} = \frac{EF_{N20t} * P_t}{2205} * \left(1 - \left(DF * AF\right)\right) \qquad \text{(Eq. V-3a)}$$

where:

E_{N_2Ot} = Annual N_2O mass emissions from nitric acid train ''t'' according to this Equation V–3a (metric tons).

EF_{N_2Ot} = Average site-specific N_2O emissions factor for nitric acid train ''t'' (lb N_2O/ton acid produced, 100 percent acid basis).

P_t = Annual nitric acid production from nitric acid train ''t'' (ton acid produced, 100 percent acid basis).

DF = Destruction efficiency of N_2O abatement technology N that is used on nitric acid train ''t'' (decimal fraction of N_2O removed from vent stream).

AF = Abatement utilization factor of N_2O abatement technology ''N'' for nitric acid train ''t'' (decimal fraction of annual production during which abatement technology is operating).

2205 = Conversion factor (lb/metric ton).

(2) If multiple N_2O abatement technologies are located in series after your test point, you must use the emissions factor (determined in Equation V–1 of this section), the destruction efficiency (determined in paragraph (d) of this section), the annual nitric acid production (determined in paragraph (i) of this section), and the abatement utilization factor (determined in paragraph (e) of this section), according to Equation V–3b of this section:

$$E_{N2Ot} = \frac{EF_{N20,t} * P_t}{2205} * \left(1 - \left(DF_1 * AF_1\right)\right) * \left(1 - \left(DF_2 * AF_2\right)\right) * \ldots * \left(1 - \left(DF_N * AF_N\right)\right) \qquad \text{(Eq. V-3b)}$$

where:

E_{N_2Ot} = Annual N_2O mass emissions from nitric acid train ''t'' according to this Equation V–3b (metric tons).

$EF_{N2O,t}$ = N_2O emissions factor for nitric acid train ''t'' (lb N_2O/ton nitric acid produced).

P_t = Annual nitric acid produced from nitric acid train ''t'' (ton acid produced, 100 percent acid basis).

DF_1 = Destruction efficiency of N_2O abatement technology 1 (decimal fraction of N_2O removed from vent stream).

AF_1 = Abatement utilization factor of N_2O abatement technology 1 (decimal fraction of time that abatement technology 1 is operating).

DF_2 = Destruction efficiency of N_2O abatement technology 2 (decimal fraction of N_2O removed from vent stream).

AF_2 = Abatement utilization factor of N_2O abatement technology 2 (decimal fraction of time that abatement technology 2 is operating).

DF_N = Destruction efficiency of N_2O abatement technology N (decimal fraction of N_2O removed from vent stream).

AF_N = Abatement utilization factor of N_2O abatement technology N (decimal fraction of time that abatement technology N is operating).

2205 = Conversion factor (lb/metric ton).

N = Number of different N_2O abatement technologies.

(3) If multiple N_2O abatement technologies are located in parallel after your test point, you must use the emissions factor (determined in Equation V–1 of this section), the destruction efficiency (determined in paragraph (d) of this section), the annual nitric acid production (determined in paragraph (i) of this section), and the abatement utilization factor (determined in paragraph (e) of this section), according to Equation V–3c of this section:

$$E_{N2Ot} = \frac{EF_{N20,t} * P_t}{2205} * \sum_{1}^{N} \left(\left(1 - \left(DF_N * AF_N\right)\right) * FC_N\right) \qquad \text{(Eq. V-3c)}$$

where:

E_{N_2Ot} = Annual N_2O mass emissions from nitric acid train ''t'' according to this Equation V–3c (metric tons).

$EF_{N2O,t}$ = N_2O emissions factor for nitric acid train ''t'' (lb N_2O/ton nitric acid produced).

P_t = Annual nitric acid produced from nitric acid train ''t'' (ton acid produced, 100 percent acid basis).

DF_N = Destruction efficiency of N_2O abatement technology ''N'' (decimal fraction of N_2O removed from vent stream).

AF_N = Abatement utilization factor of N_2O abatement technology ''N'' (decimal fraction of time that abatement technology ''N'' is operating).

FC_N = Fraction control factor of N_2O abatement technology ''N'' (decimal fraction of total emissions from nitric acid train ''t'' that are sent to abatement technology ''N'').

2205 = Conversion factor (lb/metric ton).

N = Number of different N_2O abatement technologies with a fraction control factor.

(4) If nitric acid train ''t'' does not exhaust to any N_2O abatement technology after the test point, you must use the emissions factor (determined in Equation V–1 of this section), and the annual nitric acid production (determined in paragraph (i) of this section) according to Equation V–3b of this section:

$$E_{N_2Ot} = \frac{EF_{N20t} * P_t}{2205} \qquad \text{(Eq. V-3d)}$$

where:

E_{N_2Ot} = Annual N_2O mass emissions from nitric acid train ''t'' according to this Equation V–3d (metric tons).

EF_{N_2Ot} = Average site-specific N_2O emissions factor for nitric acid train ''t'' (lb N_2O/ton acid produced, 100 percent acid basis).

P_t = Annual nitric acid production from nitric acid train ''t'' (ton acid produced, 100 percent acid basis).

2205 = Conversion factor (lb/metric ton).

(h) You must determine the annual nitric acid production emissions combined from all nitric acid trains at your facility using Equation V–4 of this section:

$$N_2O = \sum_{t=1}^{m} E_{N2Ot} \qquad \text{(Eq. V-4)}$$

Where:

N_2O = Annual process N_2O emissions from nitric acid production facility (metric tons).

E_{N_2Ot} = N_2O mass emissions per year for nitric acid train ''t'' (metric tons).

m = Number of nitric acid trains.

(i) You must determine the total annual amount of nitric acid produced on each nitric acid train ''t'' (tons acid produced, 100 percent acid basis), according to § 98.224(f).

[74 FR 56374, Oct. 30, 2009, as amended at 75 FR 66466, Oct. 28, 2010; 78 FR 71959, Nov. 29, 2013]

§ 98.224 Monitoring and QA/QC requirements.

(a) You must conduct a new performance test according to a test plan as specified in paragraphs (a)(1) through (3) of this section.

(1) Conduct the performance test annually. The test should be conducted at a point during the campaign which is representative of the average emissions rate from the nitric acid campaigns. Facilities must document the methods used to determine the representative point of the campaign when the performance test is conducted.

(2) Conduct the performance test when your nitric acid production process is changed, specifically when abatement equipment is installed.

(3) If you requested Administrator approval for an alternative method of determining N_2O emissions under § 98.223(a)(2), you must conduct the performance test if your request has not been approved by the Administrator within 150 days of the end of the reporting year in which it was submitted.

(b) You must measure the N_2O concentration during the performance test using one of the methods in paragraphs (b)(1) through (b)(3) of this section.